March 27th 2008, J. Wresnik

Comparison of uniformsky schedules with different optimization options and different network sizes

Specifications:

schedules: st16uni_45_9_230X_0_0
st24uni_45_9_230X_0_0
st32uni_45_9_230X_0_0

software: OCCAM Kalman
clk: ASD 1e-14 @ 50 min, random walk + integrated random walk
zwd: Vienna turbulence (standard)
wn: 4 ps per baseline
zwd: 0.7
grd: 0.5

networks:

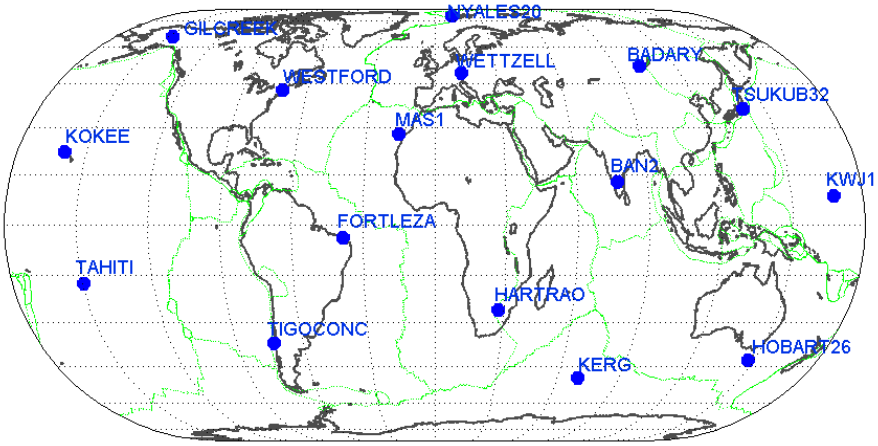

Figure 1: 16 station network

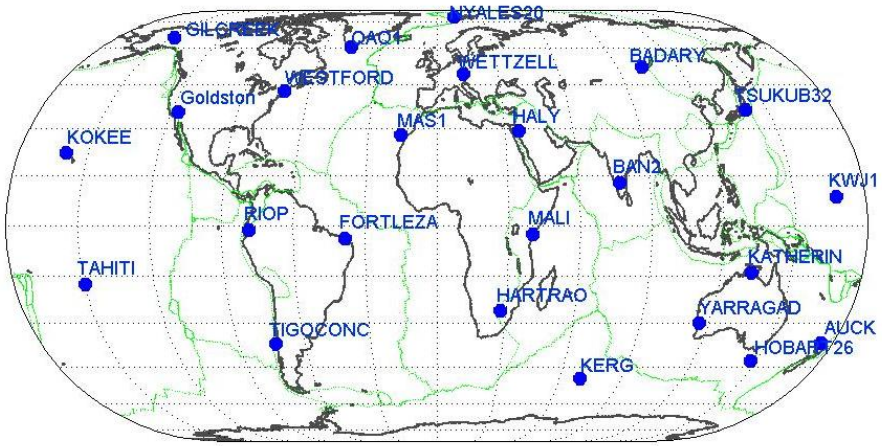

Figure 2: 24 station network

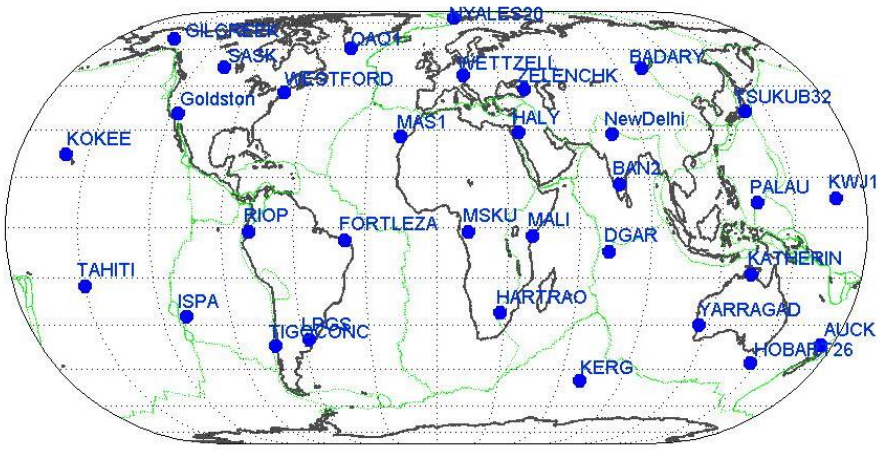

Figure 3: 32 station network

The baseline length repeatabilities for the 32 station network shows a bad behavior for the all baselines with the station RIOP. The Cn value of RIOP used for the simulation of the turbulence atmospheres is Cn:2,47 and the wind speed is very low. I think it is due to the combination of high Cn values and low wind speeds, that we get worse repeatabilities for all the baselines with this site.

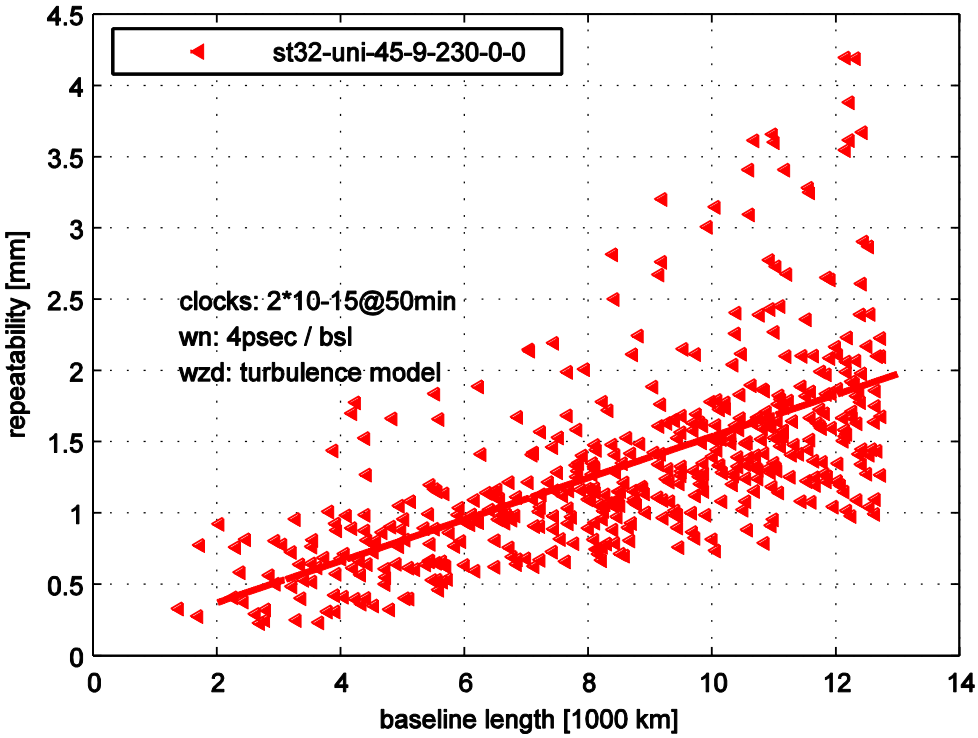

Figure 4: Baseline length repeatabilities for the schedule st32_uni_45_9_230X_0_0

The same behavior can be seen for the 24 station network. Figure 5 shows the comparison of different numbers of stations for all possible baselines.

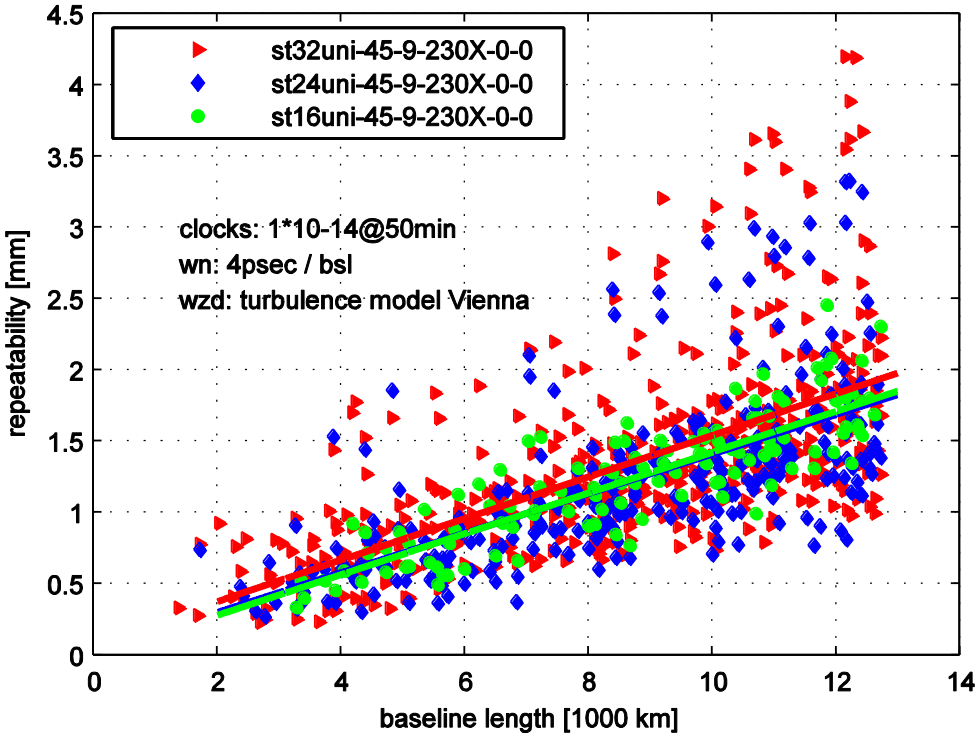

Figure 5: Comparison between the baseline length repeatabilities for 16, 24 and 32 station network using all possible baselines.

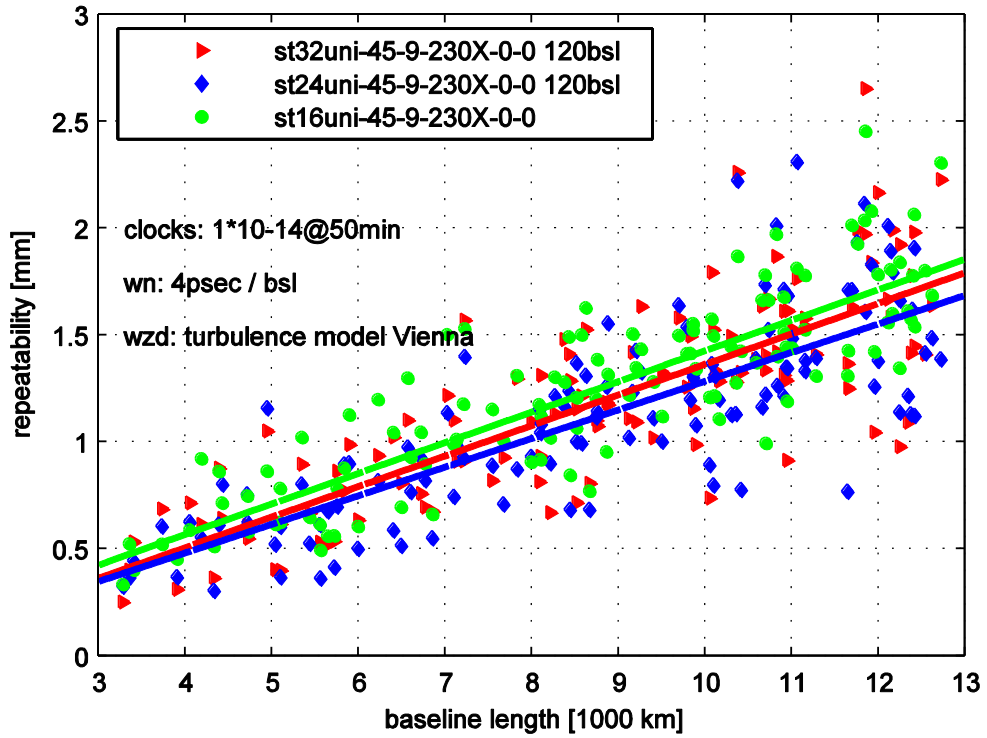

Figure 6: Comparison between the baseline length repeatabilities for 16, 24 and 32 station network.

The comparison of the 120 baselines shows that the performance of the network does not decrease if we add 8 or 16 stations to the 16 stations network.

The rms values of the 3D station position for the single station also show the highest value for the station RIOP.

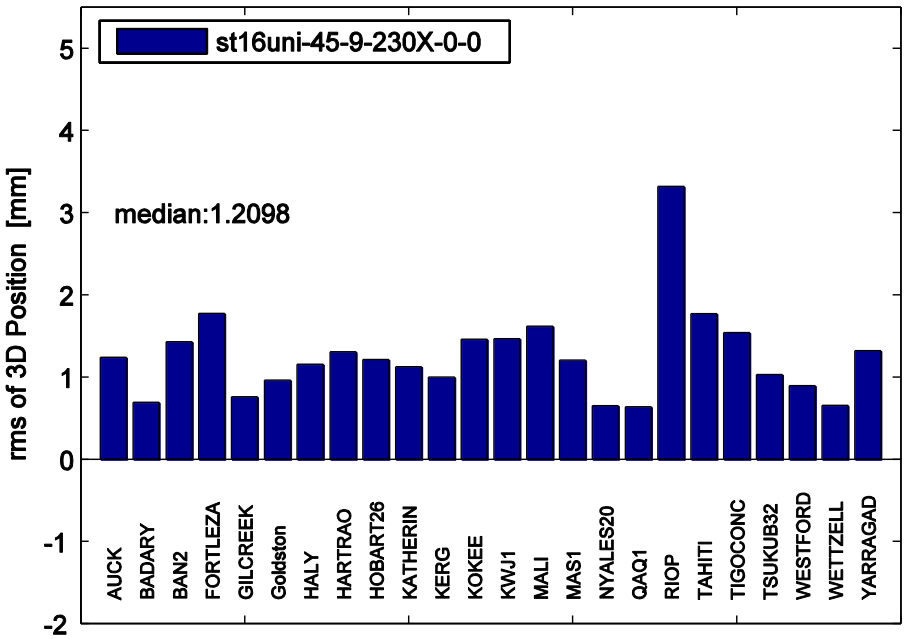

Figure 7: Rms values of the 3D station position for the 24 station network.

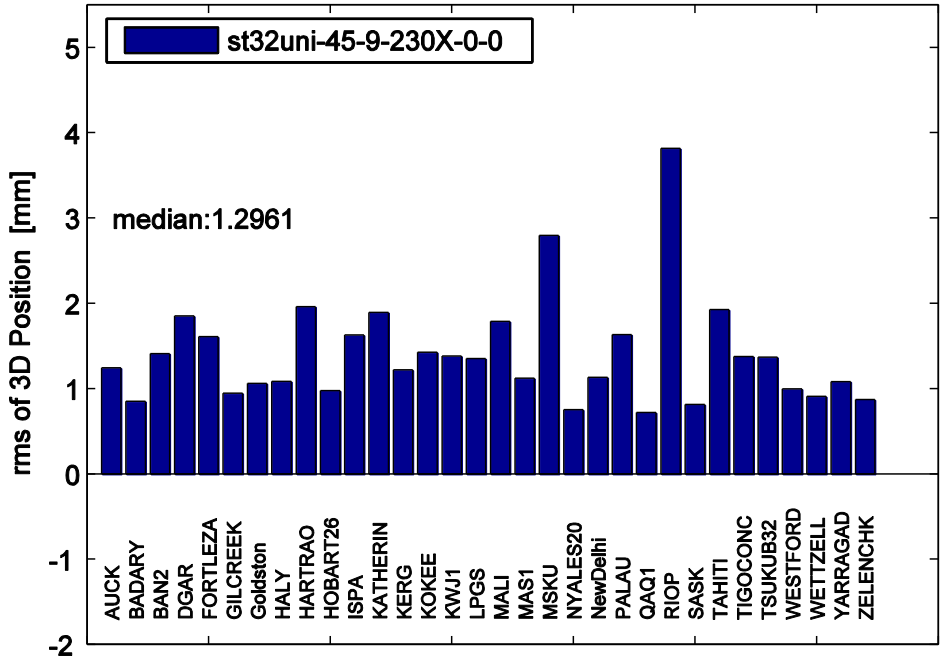

Figure 8: Rms values of the 3D station position for the 32 station network.

Table1: Median of the 3D rms of the station position for the 3 different networks.

schedule	**Median 3D rms**
st16uni_45_9_230	1.28
st24uni_45_9_230	1.21
st32uni_45_9_230	1.30